US ERA ARCHIVE DOCUMENT

# SECOND SEMIANNUAL 2007 INTERIM MEASURES GROUNDWATER MONITORING REPORT CHEVRON CINCINNATI FACILITY HOOVEN, OHIO

May 28, 2008

Project #: 500-017-011

**PREPARED BY:** Trihydro Corporation

1252 Commerce Drive, Laramie, WY 82070

PREPARED FOR: CHEVRON

Chevron Cincinnati Facility, 5000 State Route 128, Cleves, OH 45002



ENGINEERING SOLUTIONS. ADVANCING BUSINESS.

# **Table of Contents**

1.0	INTE	RODUCTION	1-1
	1.1	History of Impacts	1-1
	1.2	Modifications to the Interim Measures Groundwater Monitoring Program	1-2
	1.3	Administrative Order On Consent\RIP & OMM Plans	1-5
2.0	GRO	UNDWATER MONITORING PROCEDURES	2-1
	2.1	Fluid Level Monitoring Procedures.	2-2
	2.2	Groundwater Sampling Procedures	2-2
		2.2.1 Field Analyses	2-3
		2.2.2 Sample Collection and Analyses	2-3
3.0	SUM	MARY OF FINDINGS	3-1
	3.1	Fluid Level Monitoring Results	3-1
	3.2	Groundwater Analytical Results	3-1
	3.3	Quality Assurance/Quality Control	3-2
	3.4	Conclusions	3-3
4.0	REF	ERENCES	4-1



### **List of Tables**

- 1. Fluid Level Summary, Chevron Cincinnati Facility, Hooven, Ohio.
- Groundwater Quality Analytical Results, Chevron Cincinnati Facility, Hooven, Ohio (Volatile Organic Constituents)
- 2b. Groundwater Quality Analytical Results, Chevron Cincinnati Facility, Hooven, Ohio (Dissolved Lead)



## **List of Figures**

- 1. Site Location Map, Chevron Cincinnati Facility, Hooven, Ohio
- 2. Site Layout Map, Chevron Cincinnati Facility, Hooven, Ohio
- 3. Site Wide Potentiometric Surface Map (November 2007), Chevron Cincinnati Facility, Hooven, Ohio
- 4. Maximum LNAPL Thickness from Bimonthly Events (July, September, and November 2007), Chevron Cincinnati Facility, Hooven, Ohio
- Summary of Groundwater Analytical Results for VOC Detections (November to December 2007),
   Chevron Cincinnati Facility, Hooven, Ohio
- 6. Benzene Concentration Map (November to December 2007), Chevron Cincinnati Facility, Hooven, Ohio



# **List of Appendices**

- A. FIELD DOCUMENTATION, NOVEMBER TO DECEMBER 2007 (SECOND SEMIANNUAL) MONITORING EVENT
- B. LABORATORY ANALYTICAL REPORTS, NOVEMBER TO DECEMBER 2007 (SECOND SEMIANNUAL) MONITORING EVENT
- C. DATA VALIDATION REPORTS, NOVEMBER TO DECEMBER 2007 (SECOND SEMIANNUAL) MONITORING EVENT



#### 1.0 INTRODUCTION

Chevron Products Company, now known as Chevron U.S.A. Inc., owns a former fuels and asphalt petroleum refinery outside the unincorporated town of Hooven, located within Whitewater Township, Ohio. The location of the Chevron Cincinnati Facility (Facility) is presented on Figure 1. In 1985, Chevron assumed operation of the refinery upon acquisition of Gulf Oil Corporation. In 1986, refining operations were terminated by Chevron. Environmental restoration and dismantling operations have been ongoing since 1986.

#### 1.1 HISTORY OF IMPACTS

On January 21, 1985, a sheen of light non-aqueous phase liquid (LNAPL) was observed seeping into the Great Miami River near the south boundary of the Facility (in the vicinity of Production Well No. 15). Following the discovery of the release, refinery personnel notified the United States (U.S.) Coast Guard, the National Response Center, and the Ohio Environmental Protection Agency (EPA). In addition to reporting the release, refinery personnel immediately deployed an oil boom in the Great Miami River to contain the release.

On February 11, 1985 the Dravo Sand and Gravel Company, located to the south of the Facility, re-started the water production well located on their property, at the request of Gulf Oil Company, and seepage of LNAPL into the Great Miami River ceased. Two hydrocarbon recovery systems were subsequently installed in 1985 (by the Gulf Oil Company) one at the Facility and a second at the property owned by the Dravo Sand and Gravel Company. Analyses of LNAPL samples collected from the recovery systems indicated a composition of approximately 80% leaded gasoline and 20% diesel fuel. Approximately 3,000,000 gallons of LNAPL had been recovered by December 1990. Approximately 400,000 additional gallons of liquid hydrocarbon were recovered between December 1990 and December 1994. Approximately 400,000 additional gallons have been recovered from December 1994 to present. Recovery systems continue to operate at the former refinery as part of interim measures.

The Facility has been subject to a number of investigations since 1982. Based on early assessment activities conducted at the former refinery it was determined that:

During the active operation of the refinery prior to 1980, some of the various wastes generated by refining operations were disposed of in several Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) identified at the refinery, including tanks and impoundments. The typical wastes generated at the refinery included various heavy (high molecular weight) oily sludges, spent caustic, and leaded tank bottoms. Some of these refinery



200805\_2nd 07 SA IM Groundwater\_RPT 1-1

wastes contained residual volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), and metals such as lead, cadmium, chromium, and nickel. Other wastes such as spent caustic were considered to be hazardous as a result of elevated pH. Chevron is currently excavating and transporting these wastes to an offsite RCRA Subtitle C hazardous waste landfill.

Accidental spills and possibly pipe or tank leakage prior to the refinery shutdown in 1986 released both organic
and inorganic constituents to soil and groundwater beneath the Facility. The specific sources of the product
releases are not known. Interim measures addressing the investigation, monitoring, and remediation of LNAPL
have been on-going since the discovery of the LNAPL impacts.

In May 1993, Chevron entered into the Administrative Order on Consent (Consent Order) for the Facility with the U.S. EPA. The Consent Order stipulated completion of a RCRA Facility Investigation (RFI), and Corrective Measures Study. Since execution of the Consent Order in 1993, Chevron has implemented numerous interim measures to address impacts to soil and groundwater beneath the Facility including installation/augmentation of a groundwater monitoring system, hydraulic control system, LNAPL recovery system, and vapor extraction systems. In addition, groundwater monitoring has been performed since 1989 under the interim measures program.

# 1.2 MODIFICATIONS TO THE INTERIM MEASURES GROUNDWATER MONITORING PROGRAM

Groundwater monitoring was performed quarterly between 1989 and 1998. Chevron received approval to modify the interim measures groundwater monitoring program in correspondence from the U.S. EPA dated April 2, 1998. The modifications included:

- Elimination of the annual requirement for analysis of groundwater samples for VOCs using U.S. EPA Method 8204B
- Reduction in frequency of groundwater monitoring in wells screened in the shallow and deep portions of the unconfined aquifer from quarterly to semiannually. Sampling events were scheduled to be conducted in March-April and October-November each year
- Reduction in frequency of groundwater monitoring in wells screened in the intermediate portions of the unconfined aquifer from quarterly to annually, to be conducted during the October-November sampling event



200805\_2nd 07 SA IM Groundwater\_RPT

• If a monitoring well screened in the shallow portions of the unconfined aquifer contained LNAPL during a sampling event, then the intermediate well in the well cluster was stipulated to be sampled (wells containing LNAPL are not sampled)

Monitoring wells located in the unincorporated town of Hooven, Ohio and in the Southwest Quadrant area were not incorporated into the interim measures groundwater monitoring program in April 1998 and continued to be sampled on a quarterly basis. Subsequently, in several correspondences between Chevron and the U.S. EPA, modifications were proposed to the Hooven and Southwest Quadrant area monitoring network. The approved modifications included:

- Inclusion of monitoring Well MW-94S in the monitoring network
- Inclusion of monitoring wells MW-82D, MW-94D, and MW-97D during the quarterly monitoring events conducted between the second quarter 1999 and the second quarter 2001

Subsequently in early 2000, monitoring wells MW-82D and MW-97D were abandoned (as these wells did not contain appreciable amounts of groundwater following installation in 1999.) Chevron provided the U.S. EPA with notice regarding the well abandonment activities in correspondence dated March 24, 2000.

In correspondence dated May 5, 2000, Chevron notified the U.S. EPA that newly installed monitoring wells MW-113 through MW-118 installed in Hooven and the Southwest Quadrant would be sampled in May 2000. Chevron proposed that following review of the analytical results, a determination would be made to incorporate these wells into the interim groundwater monitoring network. Monitoring wells MW-113, MW-114, MW-115S, MW-115D, and MW-118 were subsequently incorporated into the groundwater monitoring network.

In correspondence dated March 26, 2001, Chevron requested a reduction in the frequency of groundwater monitoring in the Hooven and Southwest Quadrant monitoring wells to coincide with previous reductions to the facility wells included in the interim measures monitoring program. Wells to be included in the interim measures groundwater monitoring program at that time included:

- Hooven area monitoring wells MW-28S, MW-35, MW-37, MW-81S, MW-94S, MW-95D, MW-101, MW-113, MW-114, MW-115S, MW-115D, and MW-118 (Note: at the request of the U.S. EPA, facility monitoring Well MW-28S was included in the Hooven monitoring network to replace recently abandoned Well K-1)
- Facility wells MW-23, MW-27, L-4R, MW-48S, MW-48I, MW-48D, MW-61, MW-85S, and MW-85D



200805\_2nd 07 SA IM Groundwater\_RPT

- Cleves Well Field early warning monitoring wells MW-47S, MW-47I, MW-47D, MW-59S, MW-59D, MW-60S, and MW-60D
- Island monitoring wells MW-65S, MW-65I, MW-65D, MW-67, MW-74S, MW-74I, and MW-74D

The monitoring well network was modified at the request of the U.S. EPA to include a new groundwater monitoring well installed on the north side of U.S. Route 50, between groundwater monitoring Well MW-35 and the former location of groundwater monitoring Well K-1. This monitoring well was installed in 2001 and designated MW-120. Groundwater monitoring Well MW-120 replaced facility monitoring Well MW-28S in the interim monitoring well network beginning in April 2002.

In correspondence dated September 16, 2003, Chevron notified the U.S. EPA that monitoring Well MW-118 had been destroyed as a result of construction activities. Chevron advised the U.S. EPA that this monitoring well would not be replaced due to upcoming changes to the interim measures groundwater monitoring program as outlined in the Draft Conceptual Groundwater Remedy, submitted to the U.S. EPA in July 2003.

In the same correspondence, Chevron clarified the elimination of monitoring wells MW-93S, MW-93D, MW-94D, MW-117S, and MW-117D from the well network. The U.S. EPA had previously approved these modifications to the well network during a teleconference conducted on April 9, 2001 and documented in correspondence submitted to the U.S. EPA by Chevron on May 9, 2001. However, several of these monitoring wells were sampled in 2002 and during the first monitoring event conducted in 2003 to support preparation of the Draft Conceptual Groundwater Remedy Report. Since this report has been completed, semiannual groundwater sample collection from these referenced wells has been discontinued.

In correspondence dated October 1, 2003, Chevron outlined the agreement with the U.S. EPA to terminate natural attenuation monitoring and to reduce the island monitoring network. The modification included:

- Termination of the natural attenuation monitoring program in the island area wells
- Elimination of monitoring wells MW-47S, MW-47I, MW-47D, MW-59S, MW-59D, MW-60S, MW-60D, MW-74I and MW-74D from the Cleves well field and island monitoring network.

Trihydro

200805\_2nd 07 SA IM Groundwater\_RPT 1-4

The monitor well network was modified to include 10 new groundwater monitoring wells installed in the Hooven and Southwest Quadrant as per the Hooven Vapor Sampling Workplan dated March 3, 2005. Monitor wells MW-121, MW-122, and MW-124 through MW-130 were installed in order to more fully delineate the lateral extent of LNAPL and dissolved phase impacts beneath Hooven and to assist with correlation of potential indoor air contaminants and the refinery plume. These wells became part of the interim measures groundwater monitoring well network as they were completed between May and July of 2005.

As part of the Operations, Monitoring, and Maintenance Plan (OMM), a new network of monitoring wells was constructed at the down gradient boundary of the dissolved plume to provide early warning of potential migration. This system of sentinel and point of compliance wells consisted of monitoring well MW-131 through MW-134, and installation was completed in September of 2007. These wells are to be sampled quarterly for two years; therefore they were included into the 2nd 2007 event as the first quarterly samples collected.

Additionally, a new production well was installed and became operational at the beginning of November 2007. This well, designated PROD\_24, was installed in Hooven on the former Bell Industries property, as shown on Figure 2. Therefore, groundwater elevation measurements may be influenced by PROD\_24 operation.

In correspondence dated January 25, 2007 Chevron notified the U.S. EPA that monitoring Well MW-27 had been destroyed as a result of tree root damage to the well screen. Chevron advised the U.S. EPA that this monitoring well would be replaced with MW-26R because of its up gradient location and proximity to the leading edge of the interpreted dissolved phase limits.

#### 1.3 ADMINISTRATIVE ORDER ON CONSENT\RIP & OMM PLANS

On November 1, 2006, Chevron and the U.S. EPA agreed on an Administrative Order on Consent (2006 Order). The 2006 Order details the implementation of the environmental restoration that Chevron will complete at the site. The Remedial Implementation Plan (RIP) and OMM as required by the 2006 Order, was approved by U.S. EPA per letter to Chevron on November 19, 2007. Since the 2007 monitoring event was already underway, it was completed in accordance with the interim measure monitoring procedures. With the submittal of this second 2007 semiannual monitoring event, the interim measures at the site are now complete. Future monitoring and reporting will be conducted in accordance with the RIP and OMM. Therefore, this is the final interim measure report.



200805\_2nd 07 SA IM Groundwater\_RPT 1-5

#### 2.0 GROUNDWATER MONITORING PROCEDURES

Groundwater monitoring is conducted in accordance with the procedures outlined in the Interim Measures Mini-Quality Assurance Project Plan (Mini-QAPP), Revision 2, dated September 1996. Specific activities performed in accordance with the Mini-QAPP include:

- Bi-monthly measurement of static fluid levels
- Collection of groundwater samples
- Validation of laboratory analytical results
- Reporting of groundwater monitoring results

Fluid levels were gauged in selected monitoring wells in July, September, and November 2007. Fluid levels were measured in 34 monitoring wells during the second 2007 semiannual groundwater monitoring event conducted between November 9 and December 4, 2007. A total of 33 wells were sampled during this event. Production wells were not sampled during the second 2007 monitoring event. MW-99S was not sampled due to free product found in the well during the month of sampling. MW-113 was blocked by vehicles during several attempts to access it. MW-27 was found to be compromised, with root mass choking the screen section. MW-26R was chosen as a replacement for MW-27 because of its up gradient location and proximity to the leading edge of the interpreted dissolved phase limits. A complete listing of wells sampled as part the second 2007 semiannual groundwater monitoring event is as follows:

- Facility groundwater monitoring wells L-4R, MW-7, MW-23, MW-26R, MW-33, MW-48S, MW-48I, MW-48D, MW-85S, MW-85I, MW-85D, and MW-104S
- Hooven/Southwest Quadrant area groundwater monitoring wells MW-35, MW-37, MW-81S, MW-81D, MW-94S, MW-95S, MW-95D, MW-100S, MW-101, MW-114, MW-115S, MW-115D, MW-120, MW-128, MW-131, MW-132, MW-133, and MW-134.
- Island groundwater monitoring wells MW-65S, MW-65I, and MW-65D

Figure 2 presents the site layout map for the Facility including the monitoring wells sampled as part the second 2007 semiannual groundwater monitoring event.

Trihydro

200805\_2nd 07 SA IM Groundwater\_RPT 2-1

#### 2.1 FLUID LEVEL MONITORING PROCEDURES

Upon arriving at a well location, sampling personnel checked the well for damage and removed the lock and well cap. Any damage to the wellhead or casing, or any items requiring maintenance were noted in the field sampling record and reported to the field task leader so that the necessary repairs could be scheduled. Field personnel donned new, sterile gloves prior to gauging fluid levels at each well.

For the bi-monthly gauging events, fluid levels within each of the monitoring wells were measured within a 24-hour period. During the semiannual event, fluid levels were measured prior to the start of low-flow sampling. Fluid level measurements were performed using a Solonist® interface probe accurate to 0.01-feet. The measurements were made from the pre-marked (surveyed) measuring point on the north side of the well casing. Manufacturer's instructions were followed to ensure proper care of the fluid level probe. The fluid level measurements were recorded in the field logbooks. The exposed portion of the tape and the probe were decontaminated before performing measurements at each monitoring well.

#### 2.2 GROUNDWATER SAMPLING PROCEDURES

Groundwater samples were collected and analyzed from the monitoring wells during the second 2007 groundwater monitoring event following low-flow sampling protocols. The monitoring wells were evacuated using disposable tubing with a portable submersible pump and a variable speed controller.

The pumps were installed so that the pump intake height was located in the middle or slightly above the middle of the saturated portion of the screened interval. The flow rate was maintained between 0.1 and 0.5 liters per minute to minimize drawdown and to avoid undue pressure, temperature, or other physical disturbances to groundwater over the sampling interval. Disposable polyethylene tubing was used to evacuate each well. Prior to purging each well, the submersible pump was decontaminated in the following manner:

- External surfaces were brushed free of loose material, washed with a phosphate free decontamination solution and potable water, and rinsed with deionized or distilled water
- Internal surfaces were cleaned by placing the pump in a clean bucket containing a phosphate-free decontamination solution and allowing the pump to operate for several minutes to circulate the decontamination solution through the impellers and pump housing. The pump was then cycled through a second decontamination solution, rinsed by circulating with potable water, followed by a distilled water rinse



200805\_2nd 07 SA IM Groundwater\_RPT 2-2

Decontamination fluids and purge water were collected and disposed of into the facility wastewater treatment system.

#### 2.2.1 FIELD ANALYSES

Field parameters, including specific conductivity, pH, temperature, dissolved oxygen, oxygen reduction potential, and turbidity were measured over successive time intervals using an In-Situ Troll 9500 multi-parameter meter during well evacuation to ensure a representative groundwater sample was collected from each well. The multi-parameter water quality meters were calibrated daily, in accordance with the manufacturer's guidelines, using a factory-prepared calibration standard. In general, the following stabilization criteria were achieved over three successive readings before collecting groundwater samples:

- $pH \pm 0.1$
- Specific conductivity ± 3%
- Redox  $\pm 10$ mV
- Dissolved Oxygen ± 10%
- Turbidity  $\leq$ 5 NTUs or  $\pm$  10%

Field parameters for each monitoring well were recorded on the field forms included as Appendix A. Physical characteristics of the groundwater were also noted and recorded during sampling (i.e. sediment, color, odor, sheen, etc.).

#### 2.2.2 SAMPLE COLLECTION AND ANALYSES

Groundwater samples were collected from wells using disposable polyethylene discharge tubing attached to the submersible pump. Field personnel donned new nitrile gloves prior to sampling each well to prevent cross contamination of samples and equipment. Sample agitation was minimized during sampling.

Sample bottles were preserved in the laboratory before being sent to the site. The samples were collected and analyzed in general accordance with the Test Methods for Evaluating Solid Waste (U.S. EPA 1997). Groundwater samples collected during this event were submitted for analysis of VOCs via U.S. EPA Method 8260 and dissolved lead using



200805\_2nd 07 SA IM Groundwater\_RPT

U.S. EPA Method 6010B. Groundwater samples to be analyzed for VOCs were carefully filled during sample collection to minimize headspace while eliminating air bubbles from the sample.

The lids on each sample container were tightly secured and the sample labels filled out completely including sample identification, date and time of collection, project name, client name, field personnel initials, requested analyses, and preservation methods. The sample containers were placed on ice in an opaque cooler with proper custody maintained.

Two equipment blanks (ER1, 11292007 and ER2, 12042007) were prepared by circulating water through the pump following decontamination, then transferring the sample to the appropriate containers. Blind duplicate samples were collected from monitoring wells MW-26R, MW-48D, and MW-7. Matrix spike/matrix spike duplicate (MS/MSD) samples were collected from monitoring wells MW-35 and MW-85I.

The groundwater samples collected in November and December of 2007 were shipped under chain-of-custody procedures to Lancaster Laboratories in Lancaster, Pennsylvania. Glass containers were wrapped in bubble wrap and void spaces in the cooler were filled in order to protect against breakage during transport to the laboratory. Trip blanks and temperature blanks prepared by the laboratory were shipped with each sample cooler. Trip blanks were also analyzed for volatile organic constituents. A chain-of-custody form accompanied each cooler of samples to the laboratory.



200805\_2nd 07 SA IM Groundwater\_RPT

#### 3.0 SUMMARY OF FINDINGS

This semiannual report presents the results of interim measures groundwater monitoring conducted in November and December of 2007. Fluid level gauging was conducted on July 25, September 24, and November 28, 2007. Groundwater sampling was conducted between November 9 and December 4, 2007 for the second semiannual groundwater monitoring event. The field sampling forms are included within Appendix A.

#### 3.1 FLUID LEVEL MONITORING RESULTS

Fluid level measurements are summarized in Table 1 and include fluid level measurements recorded during bi-monthly events in 2007. A potentiometric surface map was constructed using the November 28, 2007 bi-monthly fluid level data (Figure 3). Groundwater elevation was recorded between 488.13 feet above mean sea level (ft-amsl) measured in monitoring well MW-41 and 456.37 ft-amsl measured in monitoring well PROD\_24. Groundwater flow is generally towards the south beneath the Facility. Contour lines are oriented perpendicular to the axis of the valley with minor, if any, redirection at the river. Pumping wells, characterized by "cones of depression" in the potentiometric surface, locally steepen and/or reverse hydraulic gradients near the production wells and alter prevailing hydraulic gradients "inward" beneath the site. Production well PROD\_24 was pumping at a low flow at the time of the November 28 bi-monthly event.

During the November 28, 2007 bi-monthly gauging event, LNAPL was measured in monitoring wells MW-1R, MW-19, MW-20S, MW-58S, MW-88, MW-89, MW-96S, MW-99S, MW-121, and MW-125; and in production wells PROD\_12, PROD\_19, PROD\_20, and PROD\_21. Figure 4 presents a summary of maximum LNAPL thicknesses measured from the bi-monthly events of July 25, September 24, and November 28, 2007.

#### 3.2 GROUNDWATER ANALYTICAL RESULTS

Analytical results for second semiannual 2007 groundwater monitoring event are summarized in Table 2a (Volatile Organic Constituents) and Table 2b (Dissolved Lead). The groundwater laboratory analytical reports for the second semiannual and supplemental monitoring events are included in Appendix B. Figure 5 presents the groundwater analytical results for volatile constituents for the second semiannual 2007 groundwater monitoring event. Figure 6 depicts the benzene concentration map for the groundwater monitoring event. The results of the laboratory analysis of groundwater samples submitted for the second semiannual 2007 event may be summarized as follows.



200805\_2nd 07 SA IM Groundwater\_RPT 3-1

- Benzene, toluene, ethylbenzene, and/or total xylenes were detected in groundwater samples collected from monitoring wells MW-7, MW-48S, MW-81S, MW-85S, MW-94S, MW-101S, MW-115S, and MW-128.
- Dissolved lead in groundwater was detected above the detection limit in MW-85S. The result was "J" flagged by Lancaster Labs, therefore is an estimated concentration.

#### 3.3 QUALITY ASSURANCE/QUALITY CONTROL

A 100% data validation review was performed for the groundwater analytical results for the samples collected in April 2007. A determination of acceptability was completed for precision, accuracy, method compliance, and completeness per criteria established in the U.S. EPA Region 1 Data Validation Functional Guidelines for Evaluating Environmental Analyses (U.S. EPA 1996). Copies of the data validation reports are provided in Appendix C.

Precision is the measure of variability of sample measurements. Field precision is determined by a comparison of field duplicate sample results. Laboratory precision is determined by examining the laboratory duplicate results. Evaluation of both the field and laboratory duplicates for precision was accomplished using the relative percent difference (RPD). The RPD is defined as the difference between the primary and duplicate samples divided by the mean and expressed as a percentage. Field duplicate RPD limits are set at 0-30% and laboratory RPD limits reference published or laboratory control charted limits. MS/MSD samples, and laboratory control samples/laboratory control sample duplicates (LCS/LCSD) were determined acceptable for each of the analyses. High RPD values for the blind duplicate pair of MW-7/BD3 led to the analytes to be qualified "J" for poor repeatability. RPD values between the primary and field duplicate samples for all other duplicate pairs were below 30% and determined acceptable for all other analyses.

Accuracy is a measure of sampling and analysis bias. Field accuracy was evaluated by collecting trip, and equipment blanks to monitor for possible ambient or cross contamination during sampling. Laboratory accuracy is measured by evaluating LCS and MS/MSD recoveries. Laboratory and field accuracy were determined to be acceptable for the second 2007 semiannual event.

Method compliance was determined by reviewing the initial calibrations, initial and continuous calibration verifications, holding times, detection limits, surrogate recoveries, method blanks, MS/MSD, and LCS/LCSD against method specific requirements. For sample groups 1067172 and 1067775, the analyte 1,2-dichloroethane was reported in four out of six initial/continuous calibrations; this did not warrant qualification as it is not a reported analyte. As

Trihydro

200805\_2nd 07 SA IM Groundwater\_RPT 3-2

detailed in Appendix C, each of the listed quality assurance/quality control criteria were determined acceptable per review of the laboratory quality assurance package and the raw analytical results.

Completeness is the overall ratio of the number of samples planned versus the number of samples with valid analyses. Determination of completeness included a review of the chain of custody and laboratory analytical methods. Completeness also includes a review of the analytical reports and laboratory quality assurance report. None of the constituents were qualified as rejected in any of the groundwater samples collected during the second semiannual 2007 groundwater monitoring event and completeness goals for this project have been met.

#### 3.4 CONCLUSIONS

Results from the second semiannual 2007 event were compared to previous semiannual interim measure groundwater reports in an effort to determine general trends in the groundwater movement and overall impact. Based on these comparisons, these conclusions were made:

- No additional VOC analytical results were observed in wells that had not historically been impacted during previous events.
- Dissolved lead has been historically only detected in MW-85S and was not detected in any other groundwater sample prior to 2007. During the first semiannual 2007 event, dissolved lead was detected in a few monitoring wells that did not have historic detections. It was assumed to be an anomaly, pending results of the second semiannual 2007 event. An analysis of the second semiannual event confirms the original assumption, because the dissolved lead detections were not repeated. Therefore, the low-level dissolved lead detections from the first semiannual 2007 event were considered an anomaly, possibly attributed to the field filters. After reviewing historic data and the dissolved lead results from this event, that conclusion will remain for reporting purposes.
- Monitor wells MW-101S and MW-125 were observed to have free-phase LNAPL for the first time in July 2007. For MW-125, groundwater elevations dropped below 460 ft-amsl for the first time ever on July 25, 2007, and were consistently below that level during the High Grade event. MW-101S had groundwater elevations drop consistently below 462 to 461 ft-amsl from July 24 until December 4, 2007. The groundwater elevations in both wells were influenced by the drought conditions and the High Grade pumping operations, and therefore for the first time had the smear zone exposed long enough for product to drop out of formation. These two wells are on the lateral edge of the LNAPL plume.
- Seasonal groundwater flow has not significantly changed since the implementation of the interim measures program.



200805\_2nd 07 SA IM Groundwater\_RPT 3-3

#### 4.0 REFERENCES

United States Environmental Protection Agency, New England – Region I, Office of Environmental Measurement and Evaluation. 1996. Data Validation Functional Guidelines for Evaluating Environmental Analyses. Revised December 1996.

United States Environmental Protection Agency, Office of Solid Waste and Emergency Response. 1997. Test Methods for Evaluating Solid Waste. SW-846, Revision 3.

Trihydro Corporation. 2007. Remedy Implementation Plan for Final Groundwater Remedy, Chevron Cincinnati Facility, Hooven, Ohio

Trihydro Corporation. 2007. First Semiannual 2007 Interim Measures Groundwater Monitoring Report, Chevron Cincinnati Facility, Hooven, Ohio



200805\_2nd 07 SA IM Groundwater\_RPT 4-1

**TABLES** 



	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent1	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
	modourou	(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
MW-1R	1/25/2007	501.81	ND	32.51		469.30			469.30
	3/29/2007	501.81	ND	29.55		472.26			472.26
	5/31/2007	501.81	ND	36.74		465.07			465.07
	7/25/2007	501.81	40.69	41.16	461.12	460.65	0.47	0.38	461.03
	9/24/2007	501.81	41.27	41.31	460.54	460.50	0.04	0.03	460.53
	11/28/2007	501.81	40.31	40.33	461.50	461.48	0.02	0.02	461.50
MW-4	1/25/2007	500.85	ND	31.62		469.23			469.23
	3/29/2007	500.85	ND	28.51		472.34			472.34
	5/31/2007	500.85	ND	35.61		465.24			465.24
	7/25/2007	500.85	39.29	39.39	461.56	461.46	0.10	0.08	461.54
	9/24/2007	500.85	39.78	40.13	461.07	460.72	0.35	0.28	461.00
	11/28/2007	500.85	ND	38.79		462.06			462.06
MW-5	1/25/2007	499.32	ND	31.10		468.22			468.22
	3/29/2007	499.32	ND	26.98		472.34			472.34
	5/31/2007	499.32	ND	34.00		465.32			465.32
	7/25/2007	499.32	37.42	37.43	461.90	461.89	0.01	0.01	461.90
	9/24/2007	499.32	trace	37.90		461.42			461.42
	11/28/2007	499.32	ND	36.75		462.57			462.57
MW-6	1/25/2007	500.13	ND	30.98		469.15			469.15
-	3/29/2007	500.13	ND	27.82		472.31			472.31
	5/31/2007	500.13	ND	34.75		465.38			465.38
	9/24/2007	500.13	ND	37.27		462.86			462.86
	11/28/2007	500.13	ND	37.07		463.06			463.06
MW-7	1/25/2007	485.43	ND	16.29		469.14			469.14
	3/29/2007	485.43	ND	13.07		472.36			472.36
	5/30/2007	485.43	ND	19.91		465.52			465.52
	7/25/2007	485.43	ND	22.58		462.85			462.85
	9/24/2007	485.43	ND	23.20		462.23			462.23
	11/28/2007	485.43	ND	21.95		463.48			463.48
MW-8	1/25/2007	501.62	ND	32.66		468.96			468.96
	3/29/2007	501.62	ND	29.51		472.11			472.11
	5/30/2007	501.62	ND	36.61		465.01			465.01
	7/25/2007	501.62	ND	39.83		461.79			461.79
	9/24/2007	501.62	ND	40.35		461.27			461.27
	11/28/2007	501.62	ND	39.16		462.46			462.46
MW-9	1/25/2007	506.58	ND	37.37		469.21			469.21
	3/29/2007	506.58	ND	34.29		472.29			472.29
	5/30/2007	506.58	ND	41.29		465.29			465.29
	7/25/2007	506.58	ND	44.15		462.43			462.43
	9/24/2007	506.58	ND	44.67		461.91			461.91
	11/28/2007	506.58	ND	43.41		463.17			463.17
MW-10	1/25/2007	506.90	ND	37.93		468.97			468.97
	3/29/2007	506.90	ND	34.79		472.11			472.11
	5/30/2007	506.90	ND	41.78		465.12			465.12
	7/25/2007	506.90	ND	44.39		462.51			462.51
	9/24/2007	506.90	ND	44.93		461.97			461.97
	11/28/2007	506.90	ND	43.46		463.44			463.44
MW-11	1/25/2007	505.22	ND	36.41		468.81			468.81
	3/29/2007	505.22	ND	33.20		472.02			472.02
	5/30/2007	505.22	ND	40.16		465.06			465.06
	7/25/2007	505.22	ND	42.52		462.70			462.70

	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent1	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
MW-11	9/24/2007	505.22	ND	43.05		462.17			462.17
	11/28/2007	505.22	ND	41.57		463.65			463.65
MW-12	1/25/2007	505.14	ND	36.51		468.63			468.63
	3/29/2007	505.14	ND	33.13		472.01			472.01
	5/30/2007	505.14	ND	40.04		465.10			465.10
	7/25/2007	505.14	ND	42.03		463.11			463.11
	9/24/2007	505.14	ND	42.57		462.57			462.57
	11/28/2007	505.14	ND	40.88		464.26			464.26
MW-14	1/25/2007	491.20	ND	17.62		473.58			473.58
	3/29/2007	491.20	ND	14.48		476.72			476.72
	5/30/2007	491.20	ND	20.71		470.49			470.49
	7/25/2007	491.20	ND	22.34		468.86			468.86
	9/24/2007	491.20	ND	22.66		468.54			468.54
	11/28/2007	491.20	Trace	21.30		469.90			469.90
MW-16	1/25/2007	483.04	ND	12.31		470.73			470.73
	3/29/2007	483.04	ND	9.18		473.86			473.86
	5/30/2007	483.04	ND	15.62		467.42			467.42
	7/25/2007	483.04	ND	17.13		465.91			465.91
	9/24/2007	483.04	ND	17.59		465.45			465.45
	11/28/2007	483.04	ND	15.82		467.22			467.22
MW-17	1/25/2007	492.96	ND	18.48		474.48			474.48
	3/29/2007	492.96	ND	16.89		476.07			476.07
	5/30/2007	492.96	ND	24.07		468.89			468.89
	7/25/2007	492.96	ND	26.12		466.84			466.84
	9/24/2007	492.96	ND	26.50		466.46			466.46
	11/28/2007	492.96	ND	25.96		467.00			467.00
MW-18R	1/25/2007	495.93	ND	23.11		472.82			472.82
	3/29/2007	495.93	Trace	20.99	474.94	474.94			474.94
	5/30/2007	495.93	ND	28.25		467.68			467.68
	7/25/2007	495.93	30.97	30.99	464.96	464.94	0.02	0.02	464.96
	9/24/2007	495.93	31.39	31.49	464.54	464.44	0.10	0.08	464.52
	11/28/2007	495.93	ND	31.50		464.43			464.43
MW-19	1/25/2007	495.77	25.29	25.42	470.48	470.35	0.13	0.10	470.45
	3/29/2007	495.77	22.40	23.18	473.37	472.59	0.78	0.62	473.21
	5/30/2007	495.77	29.53	29.67	466.24	466.10	0.14	0.11	466.21
	7/25/2007	495.77	ND	32.73		463.04			463.04
	9/24/2007	495.77	33.26	33.44	462.51	462.33	0.18	0.14	462.47
	11/28/2007	495.77	31.98	32.00	463.79	463.77	0.02	0.02	463.79
MW-20S	1/25/2007	501.70	ND	33.52		468.18			468.18
200	3/29/2007	501.70	ND	29.88		471.82			471.82
	5/31/2007	501.70	ND	37.00		464.70			464.70
	7/25/2007	501.70	42.13	43.21	459.57	458.49	1.08	0.86	459.35
	9/24/2007	501.70	ND	42.40		459.30			459.30
	11/28/2007	501.70	41.76	42.10	459.94	459.60	0.34	0.27	459.87
MW-21	1/25/2007	496.99	ND	22.47		474.52		0.27	474.52
= 1	3/29/2007	496.99	ND	20.22		476.77			476.77
	5/30/2007	496.99	ND	27.00		469.99			469.99
	7/25/2007	496.99	ND	28.60		468.39			468.39
	9/24/2007	496.99	ND ND	28.96		468.03		 	468.03
	11/28/2007	496.99	ND	28.16		468.83			468.83
MW-22	3/29/2007	497.47	ND	20.96	 	476.51	 	 	476.51

	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent1	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
MW-22	5/30/2007	497.47	ND	27.87		469.60			469.60
	7/25/2007	497.47	ND	29.68		467.79			467.79
	9/24/2007	497.47	ND	30.04		467.43			467.43
	11/28/2007	497.47	ND	29.37		468.10			468.10
MW-23	1/25/2007	493.56	ND	19.88		473.68			473.68
	3/29/2007	493.56	ND	16.96		476.60			476.60
	5/30/2007	493.56	ND	23.40		470.16			470.16
	7/25/2007	493.56	ND	24.94		468.62			468.62
	9/24/2007	493.56	ND	25.27		468.29			468.29
	11/28/2007	493.56	ND	24.07		469.49			469.49
MW-24	1/25/2007	499.92	ND	30.64		469.28			469.28
	3/29/2007	499.92	ND	27.56		472.36			472.36
	5/31/2007	499.92	ND T	34.70		465.22			465.22
	7/25/2007	499.92	Trace	38.55	461.37	461.37			461.37
	9/24/2007	499.92	39.04	39.78	460.88	460.14	0.74	0.59	460.73
1 #14 00D	11/28/2007	499.92	ND	38.16		461.76			461.76
MW-26R	1/25/2007	504.04	ND	35.63		468.41			468.41
	3/29/2007	504.04	ND	32.21		471.83			471.83
	5/30/2007	504.04	ND	39.21		464.83			464.83
	7/25/2007	504.04	ND	41.08		462.96			462.96
	9/24/2007	504.04	ND	41.61		462.43			462.43
MM 07	11/28/2007	504.04	ND	39.78		464.26			464.26
MW-27	1/25/2007	502.54 502.54	ND ND	34.20 30.76		468.34 471.78			468.34 471.78
	3/29/2007		ND ND					 	
	5/30/2007 7/25/2007	502.54 502.54	ND ND	37.72 39.46		464.82 463.08		 	464.82 463.08
	9/24/2007	502.54	ND ND	40.00		462.54	<del></del>		462.54
MW-28S	1/25/2007	501.50	ND ND	33.19		468.31	<del></del>		468.31
10100-200	3/29/2007	501.50	ND	29.76		471.74	<del></del>	 	471.74
	5/30/2007	501.50	ND ND	36.81		464.69	<del></del>	 	464.69
	7/25/2007	501.50	ND	38.50	 	463.00			463.00
	9/24/2007	501.50	ND	39.03		462.47			462.47
	11/28/2007	501.50	ND	37.09		464.41			464.41
MW-33	1/25/2007	494.75	ND	22.80		471.95			471.95
10100	3/29/2007	494.75	ND	18.14		476.61		<u></u>	476.61
	5/30/2007	494.75	ND	25.08		469.67			469.67
	7/25/2007	494.75	ND	26.86		467.89			467.89
	9/24/2007	494.75	ND	27.22		467.53			467.53
	11/28/2007	494.75	ND	26.66		468.09			468.09
MW-35	1/25/2007	500.86	ND	34.70		466.16			466.16
	3/29/2007	500.86	ND	28.82		472.04			472.04
	5/30/2007	500.86	ND	36.08		464.78			464.78
	9/24/2007	505.91	ND	44.11		461.80			461.80
	11/28/2007	505.91	ND	43.24		462.67			462.67
MW-37	3/29/2007	488.88	ND	16.04		472.84			472.84
	5/30/2007	488.88	ND	22.96		465.92			465.92
	7/25/2007	488.88	ND	25.57		463.31			463.31
	9/24/2007	488.88	ND	26.27		462.61			462.61
	11/28/2007	487.83	ND	25.70		462.13			462.13
MW-38	1/25/2007	499.98	ND	24.48		475.50			475.50
	9/24/2007	499.98	ND	31.48		468.50			468.50

	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent <sup>1</sup>	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
MW-38	11/28/2007	499.98	ND	30.78		469.20			469.20
MW-40	1/25/2007	493.60	21.20	21.28	472.40	472.32	0.08	0.06	472.38
	3/29/2007	493.60	18.80	18.82	474.80	474.78	0.02	0.02	474.80
	5/30/2007	493.60	ND	25.91		467.69			467.69
	7/25/2007	493.60	28.87	28.88	464.73	464.72	0.01	0.01	464.73
	9/24/2007	493.60	28.88	28.98	464.72	464.62	0.10	0.08	464.70
	11/28/2007	493.60	ND	28.35		465.25			465.25
MW-41	1/25/2007	498.39	ND	5.98		492.41			492.41
	3/29/2007	498.39	ND	7.24		491.15			491.15
	5/30/2007	498.39	ND	12.00		486.39			486.39
	7/25/2007	498.39	ND	12.67		485.72			485.72
	9/24/2007	498.39	ND	13.92		484.47			484.47
	11/28/2007	498.39	ND	10.26		488.13			488.13
MW-42S	1/25/2007	486.20	ND	13.44		472.76			472.76
WW 420	5/30/2007	486.20	ND	16.10		470.10			470.10
	7/25/2007	486.20	ND	16.96		469.24			469.24
	9/24/2007	486.20	ND	17.20		469.00			469.00
	11/28/2007	486.20	ND	15.20		471.00	<del></del>	 	471.00
NAVAL AAC		485.76	ND ND	15.36				 	471.00
MW-44S	1/25/2007 3/29/2007			12.36		470.40 473.40		 	470.40 473.40
		485.76	ND						
	5/30/2007	485.76	ND	18.55		467.21			467.21
	7/25/2007	485.76	ND	20.05		465.71			465.71
	9/24/2007	485.76	ND	20.53		465.23			465.23
	11/28/2007	485.76	ND	18.75		467.01			467.01
MW-45	3/29/2007	483.32	ND	10.55		472.77			472.77
	5/30/2007	483.32	ND	16.85		466.47			466.47
	7/25/2007	483.32	ND	18.91		464.41			464.41
	9/24/2007	483.32	ND	19.50		463.82			463.82
	11/28/2007	483.32	ND	17.73		465.59			465.59
MW-47S	1/25/2007	479.04	ND	7.85		471.19			471.19
	5/30/2007	479.04	ND	12.58		466.46			466.46
	7/25/2007	479.04	ND	13.98		465.06			465.06
	9/24/2007	479.04	ND	14.59		464.45			464.45
	11/28/2007	479.04	ND	12.78		466.26			466.26
MW-48S	1/25/2007	481.32	ND	12.77		468.55			468.55
	3/29/2007	481.32	ND	9.47		471.85			471.85
	5/30/2007	481.32	ND	16.20		465.12			465.12
	7/25/2007	481.32	ND	18.44		462.88			462.88
	9/24/2007	481.32	ND	19.05		462.27			462.27
	11/28/2007	481.32	ND	17.36		463.96			463.96
MW-49	1/25/2007	494.40	ND	19.81		474.59			474.59
	3/29/2007	494.40	ND	17.48		476.92			476.92
	5/30/2007	494.40	ND	24.28		470.12			470.12
	7/25/2007	494.40	ND	25.66		468.74			468.74
	9/24/2007	494.40	ND	25.96		468.44			468.44
	11/28/2007	494.40	ND	25.37		469.03		 	469.03
MW-50		495.52	ND ND	21.36		474.16		 	474.16
IVIVV-3U	1/25/2007							 	
	3/29/2007	495.52	ND ND	18.85		476.67 470.07			476.67 470.07
	5/30/2007	495.52	ND ND	25.45		470.07			470.07
	7/25/2007	495.52	ND	26.61		468.91			468.91
	9/24/2007	495.52	ND	26.88		468.64			468.64

	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent <sup>1</sup>	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
MW-50	11/28/2007	495.52	ND	25.88		469.64			469.64
MW-51	1/25/2007	492.22	ND	18.41		473.81			473.81
	3/29/2007	492.22	ND	15.53		476.69			476.69
	5/30/2007	492.22	ND	21.88		470.34			470.34
	7/25/2007	492.22	ND	23.06		469.16			469.16
	9/24/2007	492.22	ND	23.37		468.85			468.85
	11/28/2007	492.22	ND	22.11		470.11			470.11
MW-52	1/25/2007	499.84	ND	30.61		469.23			469.23
	3/29/2007	499.84	ND	27.47		472.37			472.37
	5/31/2007	499.84	ND	34.56		465.28			465.28
	7/25/2007	499.84	ND	38.25		461.59			461.59
	9/24/2007	499.84	ND	38.78		461.06			461.06
	11/28/2007	499.84	ND	37.68		462.16			462.16
MW-53	1/25/2007	500.54	ND	31.29		469.25			469.25
	3/29/2007	500.54	ND	28.15		472.39			472.39
	5/30/2007	500.54	ND	35.19		465.35			465.35
	7/25/2007	500.54	ND	38.76		461.78			461.78
	9/24/2007	500.54	Trace	39.28		461.26			461.26
	11/28/2007	500.54	ND	38.18		462.36			462.36
MW-55	1/25/2007	486.16	ND	14.96		471.20			471.20
	3/29/2007	486.16	ND	12.05		474.11			474.11
	5/30/2007	486.16	ND	18.15		468.01			468.01
	7/25/2007	486.16	ND	19.32		466.84			466.84
	9/24/2007	486.16	ND	19.68		466.48			466.48
	11/28/2007	486.16	ND	17.73		468.43			468.43
MW-56	1/25/2007	495.88	ND	24.65		471.23			471.23
	3/29/2007	495.88	ND	22.08		473.80			473.80
	5/30/2007	495.88	ND	29.21		466.67			466.67
	7/25/2007	495.88	ND	32.19		463.69			463.69
	9/24/2007	495.88	ND	32.65		463.23			463.23
	11/28/2007	495.88	ND	31.70		464.18			464.18
MW-57	1/25/2007	492.71	ND	21.51		471.20			471.20
	3/29/2007	492.71	ND	18.93		473.78			473.78
	5/30/2007	492.71	ND	26.00		466.71			466.71
	7/25/2007	492.71	ND	28.66		464.05			464.05
	9/24/2007	492.71	ND	29.11		463.60			463.60
	11/28/2007	492.71	ND	28.06		464.65			464.65
MW-58S	1/25/2007	495.50	24.43	25.64	471.07	469.86	1.21	0.97	470.83
	3/29/2007	495.50	21.88	22.50	473.62	473.00	0.62	0.50	473.50
	5/30/2007	495.50	28.97	29.41	466.53	466.09	0.44	0.35	466.44
	7/25/2007	495.50	Trace	32.11	463.39	463.39			463.39
	9/24/2007	495.50	32.55	32.85	462.95	462.65	0.30	0.24	462.89
	11/28/2007	495.50	31.54	31.69	463.96	463.81	0.15	0.12	463.93
MW-59S	1/25/2007	482.69	ND	13.48		469.21			469.21
	5/30/2007	482.69	ND	16.75		465.94			465.94
	7/25/2007	482.69	ND	18.08		464.61			464.61
	9/24/2007	482.69	ND	18.63		464.06			464.06
	11/28/2007	482.69	ND	16.69		466.00			466.00
MW-60S	5/30/2007	477.34	ND	12.79		464.55			464.55
	11/28/2007	477.34	ND	12.74		464.60			464.60
MW-62	1/25/2007	505.10	ND	29.86		475.24			475.24

	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent <sup>1</sup>	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
MW-62	3/29/2007	505.10	ND	31.92		473.18			473.18
	5/31/2007	505.10	ND	39.22		465.88			465.88
	7/25/2007	505.10	ND	43.36		461.74			461.74
	9/24/2007	505.10	ND	43.75		461.35			461.35
	11/28/2007	505.10	ND	42.50		462.60			462.60
MW-64	1/25/2007	484.07	ND	12.66		471.41			471.41
	3/29/2007	484.07	ND	9.88		474.19			474.19
	5/30/2007	484.07	ND	16.34		467.73			467.73
	7/25/2007	484.07	ND	17.94		466.13			466.13
	9/24/2007	484.07	ND	18.34		465.73			465.73
	11/28/2007	484.07	ND	16.74		467.33			467.33
MW-65S	1/25/2007	480.45	ND	12.17		468.28			468.28
	5/30/2007	480.45	ND	15.50		464.95			464.95
	7/25/2007	480.45	ND	16.87		463.58			463.58
	9/24/2007	480.45	ND	17.32		463.13			463.13
1 DA / 70	11/28/2007	480.45	ND	14.86		465.59			465.59
MW-78	1/25/2007	496.73	ND	22.94		473.79			473.79
	3/29/2007	496.73	ND	21.30		475.43			475.43
	5/30/2007	496.73	ND	28.58		468.15			468.15
	7/25/2007	496.73	ND	30.95		465.78			465.78
	9/24/2007	496.73	ND	31.40		465.33			465.33
MM 70	11/28/2007	496.73	ND	30.75		465.98			465.98
MW-79	1/25/2007	496.05	ND	20.73		475.32 477.57			475.32 477.57
	3/29/2007	496.05	ND ND	18.48				 	
	5/30/2007 7/25/2007	496.05 496.05	ND ND	25.64 28.18		470.41 467.87		 	470.41 467.87
	9/24/2007	496.05	ND ND	28.61		467.44		 	467.44
	11/28/2007	496.05	ND ND	27.73		468.32	<del></del>		468.32
MW-80	7/25/2007	492.08	ND ND	26.69		465.39	<del></del>	 	465.39
IVIVV-OU	9/24/2007	492.08	ND ND	27.14		464.94			464.94
	11/28/2007	492.08	ND	26.04	 	466.04			466.04
MW-81S	1/25/2007	507.72	ND	38.18		469.54			469.54
10100	3/29/2007	507.72	ND	35.49		472.23			472.23
	5/31/2007	507.72	ND	42.64		465.08	<del></del>		465.08
	7/25/2007	507.72	46.04	46.71	461.68	461.01	0.67	0.54	461.55
	9/24/2007	507.72	46.61	46.69	461.11	461.03	0.08	0.06	461.09
	11/28/2007	507.72	ND	45.70		462.02			462.02
MW-84S	1/25/2007	483.57	ND	9.83		473.74			473.74
	3/29/2007	483.57	ND	7.23		476.34			476.34
	5/30/2007	483.57	ND	13.92		469.65			469.65
	7/25/2007	483.57	ND	15.13		468.44			468.44
	9/24/2007	483.57	Trace	15.48		468.09			468.09
	11/28/2007	483.57	ND	14.55		469.02			469.02
MW-85S	1/25/2007	484.07	ND	15.00		469.07			469.07
	3/29/2007	484.07	ND	11.75		472.32			472.32
	5/30/2007	484.07	ND	18.05		466.02			466.02
	7/25/2007	484.07	Trace	20.13	463.94	463.94			463.94
	9/24/2007	484.07	20.93	21.14	463.14	462.93	0.21	0.17	463.10
	11/28/2007	484.07	ND	19.20		464.87			464.87
MW-86	1/25/2007	483.70	12.60	12.65	471.10	471.05	0.05	0.04	471.09
	3/29/2007	483.70	9.78	9.80	473.92	473.90	0.02	0.02	473.92

	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent1	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
MW-86	5/30/2007	483.70	16.80	16.81	466.90	466.89	0.01	0.01	466.90
	7/25/2007	483.70	ND	19.02		464.68			464.68
	9/24/2007	483.70	Trace	19.53		464.17			464.17
	11/28/2007	483.70	ND	18.12		465.58			465.58
MW-87S	1/25/2007	482.68	ND	12.23		470.45			470.45
	3/29/2007	482.68	Trace	9.31	473.37	473.37			473.37
	5/30/2007	482.68	ND	16.10		466.58			466.58
	7/25/2007	482.68	ND	18.37		464.31			464.31
	9/24/2007	482.68	ND	18.89		463.79			463.79
	11/28/2007	482.68	Trace	17.38		465.30			465.30
MW-88	1/25/2007	481.99	ND	11.85		470.14			470.14
	3/29/2007	481.99	8.67	8.75	473.32	473.24	0.08	0.06	473.30
	5/30/2007	481.99	15.70	15.80	466.29	466.19	0.10	0.08	466.27
	7/25/2007	481.99	18.37	19.00	463.62	462.99	0.63	0.50	463.49
	9/24/2007	481.99	18.80	19.14	463.19	462.85	0.34	0.27	463.12
	11/28/2007	481.99	17.17	17.18	464.82	464.81	0.01	0.01	464.82
MW-89	1/25/2007	483.46	ND	13.12		470.34			470.34
	3/29/2007	483.46	ND	9.61		473.85			473.85
	5/30/2007	483.46	ND	16.35		467.11			467.11
	7/25/2007	483.46	ND	18.74		464.72			464.72
	9/24/2007	483.46	Trace	19.25		464.21			464.21
	11/28/2007	483.46	17.78	17.79	465.68	465.67	0.01	0.01	465.68
/W-92S	1/25/2007	521.85	ND	52.45		469.40			469.40
020	7/25/2007	521.85	60.61	60.70	461.24	461.15	0.09	0.07	461.22
	9/24/2007	521.85	61.04	61.18	460.81	460.67	0.14	0.11	460.78
	11/28/2007	521.85	ND	60.22		461.63			461.63
ЛW-93S	1/25/2007	528.71	ND	58.79		469.92			469.92
	3/29/2007	528.71	ND	56.50		472.21			472.21
	5/30/2007	528.71	ND	63.14		465.57			465.57
	7/25/2007	528.71	ND	67.29		461.42			461.42
	9/24/2007	528.71	67.78	67.82	460.93	460.89	0.04	0.03	460.92
	11/28/2007	528.71	ND	67.18		461.53			461.53
ЛW-94S	1/25/2007	529.16	ND	59.61		469.55			469.55
	3/29/2007	529.16	ND	57.16		472.00			472.00
	5/30/2007	529.16	ND	63.95		465.21			465.21
	7/25/2007	529.16	ND	67.15		462.01			462.01
	9/24/2007	529.16	ND	67.72		461.44			461.44
	11/28/2007	529.16	ND	67.12		462.04			462.04
/IW-95S	1/25/2007	541.47	ND	71.03		470.44			470.44
	3/29/2007	541.47	ND	70.02		471.45			471.45
	5/30/2007	541.47	ND	75.98		465.49			465.49
	7/25/2007	541.47	ND	80.10		461.37			461.37
	9/24/2007	541.47	ND	80.84		460.63			460.63
	11/28/2007	541.47	ND	80.47		461.00			461.00
/W-96S	1/25/2007	525.48	ND	55.70		469.78			469.78
	3/29/2007	525.48	Trace	53.44	472.04	472.04			472.04
	5/30/2007	525.48	ND	62.47		463.01			463.01
	7/25/2007	525.48	64.29	66.44	461.19	459.04	2.15	1.72	460.76
	9/24/2007	525.48	64.93	65.10	460.55	460.38	0.17	0.14	460.52
	11/28/2007	525.48	64.73	65.30	460.75	460.18	0.17	0.46	460.64
MW-98S									466.90
MW-98S	1/25/2007	501.37	ND	34.47		466.90			

	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent <sup>1</sup>	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
ЛW-98S	3/29/2007	501.37	Trace	29.40	471.97	471.97			471.97
	5/31/2007	501.37	36.55	36.56	464.82	464.81	0.01	0.01	464.82
	7/25/2007	501.37	41.69	41.72	459.68	459.65	0.03	0.02	459.67
	9/24/2007	501.37	41.88	41.89	459.49	459.48	0.01	0.01	459.49
	11/28/2007	501.37	ND	41.21		460.16			460.16
/W-99S	1/25/2007	524.25	ND	54.43		469.82			469.82
	3/29/2007	524.25	ND	52.25		472.00			472.00
	5/30/2007	524.25	ND	59.19		465.06			465.06
	7/25/2007	524.25	63.80	63.91	460.45	460.34	0.11	0.09	460.43
	9/24/2007	524.25	63.80	64.90	460.45	459.35	1.10	0.88	460.23
	11/28/2007	524.25	63.83	64.25	460.42	460.00	0.42	0.34	460.34
W-100S	1/25/2007	541.67	ND	76.90		464.77			464.77
	3/29/2007	541.67	ND	69.88		471.79			471.79
	7/25/2007	541.67	ND	79.98		461.69			461.69
	9/24/2007	541.67	ND	80.75		460.92			460.92
	11/28/2007	541.67	ND	80.59		461.08			461.08
IW-101S	1/25/2007	527.57	ND	57.00		470.57			470.57
	3/29/2007	527.57	ND	55.48		472.09			472.09
	5/30/2007	527.57	ND	62.20		465.37			465.37
	7/25/2007	527.57	ND	65.87		461.70	<del></del>		461.70
	9/24/2007	527.57	66.41	66.48	461.16	461.09	0.07	0.06	461.15
	11/28/2007	527.57	ND	66.03		461.54			461.54
W-103S	1/25/2007	482.35	ND	12.12		470.23		 	470.23
W-1035			ND ND						
	3/29/2007	482.35		9.12		473.23			473.23
	5/30/2007	482.35	ND	15.45		466.90			466.90
	7/25/2007	482.35	ND	17.26		465.09			465.09
	9/24/2007	482.35	ND	17.80		464.55			464.55
	11/28/2007	482.35	ND	16.06		466.29			466.29
1W-104S	1/25/2007	486.00	ND	14.48		471.52			471.52
	3/29/2007	486.00	ND	11.71		474.29			474.29
	5/30/2007	486.00	ND	18.00		468.00			468.00
	7/25/2007	486.00	ND	19.29		466.71			466.71
	9/24/2007	486.00	ND	19.63		466.37			466.37
	11/28/2007	486.00	ND	17.98		468.02			468.02
IW-105S	1/25/2007	488.87	ND	15.58		473.29			473.29
	3/29/2007	488.87	ND	13.23		475.64			475.64
	5/30/2007	488.87	ND	20.21		468.66			468.66
	7/25/2007	488.87	ND	21.71		467.16			467.16
	9/24/2007	488.87	ND	22.05		466.82			466.82
	11/28/2007	488.87	ND	21.05		467.82			467.82
W-107S	1/25/2007	493.37	ND	18.88		474.49			474.49
	3/29/2007	493.37	ND	17.22		476.15			476.15
	5/30/2007	493.37	ND	24.45		468.92			468.92
	7/25/2007	493.37	ND	26.41		466.96			466.96
	9/24/2007	493.37	ND	26.80	 	466.57	 	 	466.57
	11/28/2007	493.37	ND	26.27	 	467.10	 	 	467.10
IW 100S			ND ND					 	
/W-109S	1/25/2007	485.39		11.51		473.88			473.88
	3/29/2007	485.39	ND ND	8.37		477.02			477.02
	5/30/2007	485.39	ND	14.91		470.48			470.48
	7/25/2007	485.39	ND	16.02		469.37			469.37
	9/24/2007	485.39	ND	16.29		469.10			469.10

	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent <sup>1</sup>	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
MW-109S	11/28/2007	485.39	ND	14.89		470.50			470.50
MW-111S	1/25/2007	495.41	ND	21.29		474.12			474.12
	3/29/2007	495.41	ND	18.63		476.78			476.78
	5/30/2007	495.41	ND	25.15		470.26			470.26
	7/25/2007	495.41	ND	26.65		468.76			468.76
	9/24/2007	495.41	ND	26.98		468.43			468.43
	11/28/2007	495.41	ND	25.90		469.51			469.51
MW-112	1/25/2007	501.94	ND	32.90		469.04			469.04
	3/29/2007	501.94	ND	29.82		472.12			472.12
	5/31/2007	501.94	ND	36.92		465.02			465.02
	7/25/2007	501.94	41.31	41.71	460.63	460.23	0.40	0.32	460.55
	9/24/2007	501.94	ND	41.87		460.07			460.07
	11/28/2007	501.94	ND	40.95		460.99			460.99
MW-113	1/25/2007	543.73	ND	71.67		472.06			472.06
	3/29/2007	543.73	ND	71.74		471.99			471.99
	5/30/2007	543.73	ND	77.17		466.56			466.56
	9/24/2007	543.73	ND	80.44		463.29			463.29
	11/28/2007	543.73	ND	80.32		463.41			463.41
MW-114	3/29/2007	540.70	ND	69.00		471.70			471.70
	5/30/2007	540.70	ND	75.33		465.37			465.37
	7/25/2007	540.70	ND	78.51		462.19			462.19
	9/24/2007	540.70	ND	79.19		461.51			461.51
	11/28/2007	540.70	ND	78.81		461.89			461.89
MW-115S	1/25/2007	506.52	ND	35.92		470.60			470.60
	3/29/2007	506.52	ND	34.54		471.98			471.98
	5/30/2007	506.52	ND	41.51		465.01			465.01
	7/25/2007	506.52	ND	44.31		462.21			462.21
	9/24/2007	506.52	ND	44.91		461.61			461.61
	11/28/2007	506.52	ND	44.25		462.27			462.27
MW-119	1/25/2007	507.14	ND	35.10		472.04			472.04
	3/29/2007	507.14	ND	36.57		470.57			470.57
	5/30/2007	507.14	ND	43.29		463.85			463.85
	7/25/2007	507.14	ND	45.50		461.64			461.64
	11/28/2007	507.14	ND	45.64		461.50			461.50
MW-120	1/25/2007	503.72	ND	34.19		469.53			469.53
	3/29/2007	503.72	ND	31.82		471.90			471.90
	5/30/2007	503.72	ND	39.26		464.46			464.46
	7/25/2007	503.72	ND	41.32		462.40			462.40
	9/24/2007	503.72	ND	41.84		461.88			461.88
	11/28/2007	503.72	ND	40.60		463.12			463.12
MW-121	7/25/2007	506.55	46.37	47.72	460.18	458.83	1.35	1.08	459.91
	9/24/2007	506.55	46.53	46.70	460.02	459.85	0.17	0.14	459.99
	11/28/2007	506.55	46.15	46.43	460.40	460.12	0.28	0.22	460.34
MW-122	3/29/2007	531.22	ND	59.32		471.90			471.90
····· ·	5/30/2007	531.22	ND	65.92		465.30			465.30
	9/24/2007	531.22	ND	70.42		460.80			460.80
	11/28/2007	531.22	Trace	70.37		460.85			460.85
MW-124	1/25/2007	543.81	ND	72.90		470.91			470.91
	3/29/2007	543.81	ND	72.37		471.44			471.44
	5/30/2007	543.81	ND	78.83		464.98			464.98
	7/25/2007	543.81	ND	82.70		461.11			461.11

	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent <sup>1</sup>	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
MW-124	9/24/2007	543.81	ND	83.41		460.40			460.40
	11/28/2007	543.81	ND	83.19		460.62			460.62
MW-125	1/25/2007	538.37	ND	68.12		470.25			470.25
	3/29/2007	538.37	ND	67.10		471.27			471.27
	5/30/2007	538.37	ND	73.80		464.57			464.57
	7/25/2007	538.37	77.67	78.67	460.70	459.70	1.00	0.80	460.50
	9/24/2007	538.37	Trace	78.32		460.05			460.05
	11/28/2007	538.37	78.17	78.25	460.20	460.12	0.08	0.06	460.18
ЛW-126	7/25/2007	528.14	67.78	68.78	460.36	459.36	1.00	0.80	460.16
	9/24/2007	528.14	68.23	68.30	459.91	459.84	0.07	0.06	459.90
ЛW-128	1/25/2007	529.98	ND	60.03		469.95			469.95
	3/29/2007	529.98	ND	57.93		472.05			472.05
	5/30/2007	529.98	ND	64.98		465.00			465.00
	7/25/2007	529.98	ND	68.35		461.63			461.63
	9/24/2007	529.98	ND	68.84		461.14			461.14
	11/28/2007	529.98	ND	68.12		461.86			461.86
MW-129	1/25/2007	543.19	ND	71.74		471.45			471.45
	3/29/2007	543.19	ND	71.43		471.76			471.76
	5/30/2007	543.19	ND	77.64		465.55			465.55
	7/25/2007	543.19	ND	81.33		461.86			461.86
	9/24/2007	543.19	ND	82.04		461.15			461.15
	11/28/2007	543.19	ND	81.83		461.36		<u></u>	461.36
ЛW-130	1/25/2007	542.97	ND	62.70		480.27			480.27
VIVV-130	3/29/2007	542.97	ND ND	63.01	 	479.96		 	479.96
	5/30/2007	542.97	ND	63.05		479.92			479.92
	7/25/2007	542.97	ND	63.24		479.73			479.73
	9/24/2007	542.97	ND	63.23	 	479.74		 	479.74
	11/28/2007	542.97	ND	63.16		479.81		 	479.81
MM 101		497.48	ND ND	35.25		462.23		 	462.23
MW-131	11/28/2007								
MW-132	11/28/2007	500.53	ND ND	36.70		463.83			463.83
MW-133	11/28/2007	506.75	ND	44.21		462.54			462.54
MW-134	11/28/2007	500.24	ND	36.47		463.77			463.77
GPW-1I	9/24/2007	475.86	ND	20.11		455.75			455.75
00111110	11/28/2007	476.00	ND	17.27		458.73			458.73
GPW-1S	1/25/2007	480.38	ND	14.30		466.08			466.08
GPW-2S	1/25/2007	474.75	ND	9.41		465.34			465.34
	3/29/2007	474.75	ND	4.93		469.82			469.82
	5/30/2007	474.75	ND	12.68		462.07			462.07
	7/25/2007	474.75	ND	14.03		460.72			460.72
	9/24/2007	474.75	ND	14.61		460.14			460.14
	11/28/2007	474.75	ND	11.12		463.63			463.63
GPW-3S	1/25/2007	480.53	ND	11.49		469.04			469.04
	3/29/2007	480.53	ND	8.87		471.66			471.66
	5/30/2007	480.53	ND	17.48		463.05			463.05
	7/25/2007	480.53	ND	18.97		461.56			461.56
	9/24/2007	480.53	ND	19.56		460.97			460.97
	11/28/2007	480.53	ND	17.62		462.91			462.91
GPW-4S	1/25/2007	480.77	ND	12.37		468.40			468.40
	3/29/2007	480.77	ND	9.37		471.40			471.40
	5/30/2007	480.77	ND	17.91		462.86			462.86
	7/25/2007	480.77	ND	19.40		461.37			461.37

	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent <sup>1</sup>	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
GPW-4S	9/24/2007	480.77	ND	19.98		460.79			460.79
	11/28/2007	480.77	ND	17.79		462.98			462.98
GPW-5S	1/25/2007	480.77	ND	11.86		468.91			468.91
	3/29/2007	480.77	ND	9.02		471.75			471.75
	5/30/2007	480.77	ND	17.67		463.10			463.10
	7/25/2007	480.77	ND	19.16		461.61			461.61
	9/24/2007	480.77	ND	19.76		461.01			461.01
	11/28/2007	480.77	ND	17.68		463.09			463.09
-1RR	1/25/2007	493.90	ND	19.30		474.60			474.60
	3/29/2007	493.90	ND	17.78		476.12			476.12
	5/30/2007	493.90	ND	24.84		469.06			469.06
	7/25/2007	493.90	ND	26.88		467.02			467.02
	9/24/2007	493.90	ND	27.27		466.63			466.63
	11/28/2007	493.90	ND	26.74		467.16			467.16
2R	1/25/2007	492.19	ND ND	18.52		473.67		 	473.67
2N						476.67		 	
	3/29/2007	492.19	ND	15.52					476.67
	5/30/2007	492.19	ND	22.03		470.16			470.16
	7/25/2007	492.19	ND	23.31		468.88			468.88
	9/24/2007	492.19	ND	23.63		468.56			468.56
	11/28/2007	492.19	ND	22.36		469.83			469.83
₋-3R	1/25/2007	490.99	ND	17.35		473.64			473.64
	3/29/2007	490.99	ND	15.51		475.48			475.48
	5/30/2007	490.99	Trace	22.74	468.25	468.25			468.25
	7/25/2007	490.99	ND	24.83		466.16			466.16
	9/24/2007	490.99	Trace	25.23		465.76			465.76
	11/28/2007	490.99	ND	24.51		466.48			466.48
4R	1/25/2007	495.91	ND	21.52		474.39			474.39
	3/29/2007	495.91	ND	19.53		476.38			476.38
	5/30/2007	495.91	ND	26.67		469.24			469.24
	7/25/2007	495.91	ND	28.44		467.47			467.47
	9/24/2007	495.91	ND	25.81		470.10			470.10
	11/28/2007	495.91	ND	28.26		467.65			467.65
5R	1/25/2007	493.41	ND	19.37		474.04			474.04
511	3/29/2007	493.41	ND ND	16.84	 	476.57		 	476.57
	7/25/2007	493.41	ND ND	25.15		468.26		 	468.26
			ND ND		 	467.91		 	
	9/24/2007	493.41		25.50					467.91
7	11/28/2007	493.41	ND	25.27		468.14			468.14
7	1/25/2007	496.90	ND	26.44		470.46			470.46
	3/29/2007	496.90	ND	23.62		473.28			473.28
	5/30/2007	496.90	ND	30.55		466.35			466.35
	7/25/2007	496.90	ND	33.47		463.43			463.43
	9/24/2007	496.90	ND	33.95		462.95			462.95
	11/28/2007	496.90	ND	32.76		464.14			464.14
PROD_12	11/28/2007	499.10	34.77	35.02	464.33	464.08	0.25	0.20	464.28
PROD_15	3/29/2007	508.88	ND	36.78		472.10			472.10
	5/31/2007	508.88	ND	43.79		465.09			465.09
	7/25/2007	508.88	ND	46.21		462.67			462.67
	9/24/2007	508.88	Trace	46.71		462.17			462.17
	11/28/2007	508.88	ND	45.25		463.63			463.63
PROD_19	1/25/2007	502.56	ND	35.85		466.71			466.71
	3/29/2007	502.56	ND	31.40		471.16			471.16

	Date	Measuring Point	Depth to	Depth to	Elevation of	Uncorrected Water	LNAPL	Equivalent <sup>1</sup>	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
PROD_19	5/31/2007	502.56	38.40	38.41	464.16	464.15	0.01	0.01	464.16
	7/25/2007	502.56	44.60	44.70	457.96	457.86	0.10	0.08	457.94
	9/24/2007	502.56	45.22	45.32	457.34	457.24	0.10	0.08	457.32
	11/28/2007	502.56	44.60	44.65	457.96	457.91	0.05	0.04	457.95
PROD_20	1/25/2007	502.96	33.66	33.67	469.30	469.29	0.01	0.01	469.30
	3/29/2007	502.96	ND	30.71		472.25			472.25
	5/31/2007	502.96	ND	37.83		465.13			465.13
	7/25/2007	502.96	41.75	42.15	461.21	460.81	0.40	0.32	461.13
	9/24/2007	502.96	42.72	42.73	460.24	460.23	0.01	0.01	460.24
	11/28/2007	502.96	41.71	41.72	461.25	461.24	0.01	0.01	461.25
PROD_21	1/25/2007	504.63	ND	36.03		468.60			468.60
	3/29/2007	504.63	ND	32.57		472.06			472.06
	5/31/2007	504.63	ND	39.67		464.96			464.96
	7/25/2007	504.63	44.52	45.24	460.11	459.39	0.72	0.58	459.97
	9/24/2007	504.63	Trace	45.31		459.32			459.32
	11/28/2007	504.63	44.80	44.88	459.83	459.75	0.08	0.06	459.81
PROD_23	1/25/2007	504.58	ND	35.02		469.56			469.56
	3/29/2007	504.58	ND	32.03		472.55			472.55
	5/31/2007	504.58	ND	39.17		465.41			465.41
	7/25/2007	504.58	43.25	43.61	461.33	460.97	0.36	0.29	461.26
	9/24/2007	504.58	44.16	44.23	460.42	460.35	0.07	0.06	460.41
	11/28/2007	504.58	ND	43.10		461.48			461.48
PROD_24	11/28/2007	522.87	ND	66.50		456.37			456.37
RBGP-44	3/29/2007	482.45	ND	13.06		472.59			472.59
	5/30/2007	482.45	ND	20.22		467.19			467.19
	7/25/2007	482.45	ND	21.66		466.10			466.10
	9/24/2007	482.45	ND	22.18		465.71			465.71
	11/28/2007	482.45	ND	17.95		468.90			468.90
T-3	1/25/2007	496.22	ND	21.48		474.74			474.74
	3/29/2007	496.22	ND	19.10		477.12			477.12
	5/30/2007	496.22	ND	26.05		470.17			470.17
	7/25/2007	496.22	ND	27.56		468.66			468.66
	9/24/2007	496.22	ND	27.86		468.36			468.36
	11/28/2007	496.22	ND	27.35		468.87			468.87
T-5	1/25/2007	497.28	ND	22.54		474.74			474.74
	3/29/2007	497.28	ND	20.25		477.03			477.03
	5/30/2007	497.28	ND	27.14		470.14			470.14
	7/25/2007	497.28	ND	28.62		468.66			468.66
	9/24/2007	497.28	ND	28.92		468.36			468.36
	11/28/2007	497.28	ND	28.39		468.89			468.89
TH-1S	1/25/2007	477.42	ND	8.89		468.53			468.53
	3/29/2007	477.42	ND	5.86		471.56			471.56
	5/30/2007	477.42	ND	14.55		462.87			462.87
	7/25/2007	477.42	ND	16.03		461.39			461.39
	9/24/2007	477.42	ND	16.63		460.79			460.79
	11/28/2007	477.42	ND	14.47		462.95			462.95
TH-2	1/25/2007	473.89	ND	7.90		465.99			465.99
	5/30/2007	475.19	ND	12.82		462.37			462.37
	7/25/2007	475.19	ND	14.21		460.98			460.98
	9/24/2007	475.19	ND	14.78		460.41			460.41
	11/28/2007	475.19	ND	11.92		463.27			463.27

	Date	Measuring Point	Depth to	Depth to	Elevation of	<b>Uncorrected Water</b>	LNAPL	Equivalent <sup>1</sup>	Corrected Water
Well	Measured	Elevation	LNAPL	Groundwater	LNAPL	Table Elevation	Thickness	LNAPL Head	Table Elevation
		(ft-amsl)	(ft-bmp)	(ft-bmp)	(ft-amsl)	(ft-amsl)	(ft)	(ft)	(ft-amsl)
TH-3	1/25/2007	474.73	ND	4.40		470.33			470.33
	3/29/2007	474.73	ND	2.46		472.27			472.27
	5/30/2007	474.73	ND	11.25		463.48			463.48
	7/25/2007	474.73	ND	12.83		461.90			461.90
	9/24/2007	474.73	ND	13.43		461.30			461.30
	11/28/2007	474.73	ND	11.95		462.78			462.78

Notes:

t - feet

ft-amsl - feet above mean sea level ft-bmp - feet below measuring point

ND - not detected NA - not available

<sup>&</sup>lt;sup>1</sup> Equivalent LNAPL Head is calculated as the LNAPL thickness multiplied by the LNAPL density relative to water (0.8)

# **EPA ARCHIVE**

# TABLE 2A GROUNDWATER QUALITY ANALYTICAL RESULTS CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO (VOLATILE ORGANIC CONSTITUENTS)

		1,2-Dichloro	1,3-Dichloro	1,4-Dichloro	Danner	Chlaraharana	Eth. dh.a	V. I	. Volene	Talvana	V. danaa (tatal)
Location ID	Date Sampled	benzene (mg/L)	benzene (mg/L)	benzene (mg/L)	Benzene (mg/L)	Chlorobenzene (mg/L)	Ethylbenzene (mg/L)	m,p-Xylene (mg/L)	o-Xylene (mg/L)	Toluene (mg/L)	Xylenes (total) (mg/L)
L-4R	11/10/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-7	11/30/07	ND(0.001)	ND(0.001)	ND(0.001)	0.016 J	ND(0.0008)	0.001 J	0.008 J	0.001 J	0.001 J	0.009 J
MW-23	11/09/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-26R	11/14/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-33	11/09/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-35	11/20/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-37	11/27/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-48D	11/28/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-48I	11/28/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-48S	11/28/07	ND(0.001)	ND(0.001)	ND(0.001)	0.002 J	ND(0.0008)	0.009	0.19	0.023	0.001 J	0.21
MW-65D	11/12/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-65I	11/12/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-65S	11/12/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-81D	11/30/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-81S	11/30/07	ND(0.001)	ND(0.001)	ND(0.001)	0.067	ND(0.0008)	0.049	0.047	0.001 J	0.003 J	0.048
MW-85D	12/04/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-85I	12/04/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-85S	12/04/07	ND(0.001)	ND(0.001)	ND(0.001)	0.002 J	ND(0.0008)	0.37	0.28	0.014	0.004 J	0.29
MW-94S	11/27/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	0.004 J	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-95D	11/14/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-95S	11/14/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-100S	11/16/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-101S	11/30/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	0.003 J	0.001 J	ND(0.0008)	ND(0.0007)	0.001 J
MW-104S	11/10/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-114	11/27/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-115D	11/29/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-115S	11/29/07	ND(0.001)	ND(0.001)	ND(0.001)	0.007	ND(0.0008)	0.0009 J	0.0008 J	ND(0.0008)	0.001 J	0.0008 J
MW-120	11/15/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-128	11/29/07	ND(0.001)	ND(0.001)	ND(0.001)	0.002 J	ND(0.0008)	0.008	0.016	0.0009 J	0.002 J	0.017
MW-131	11/20/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-132	11/19/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-133	11/20/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
MW-134	11/19/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
Equipment Blank	11/29/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
	12/04/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
Trip Blank	11/16/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
	11/27/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
	11/30/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)
	12/06/07	ND(0.001)	ND(0.001)	ND(0.001)	ND(0.0005)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0008)	ND(0.0007)	ND(0.0008)

Notes

ND Not detected at the indicated laboratory reporting limit

J Estimated Value mg/L miligrams per liter

ProjectDirect: Table 2a PK:16 RK:125

# TABLE 2B GROUNDWATER QUALITY ANALYTICAL RESULTS CHEVRON CINCINNATI FACILITY, HOOVEN, OHIO (DISSOLVED LEAD)

Location ID	Date Sampled	Lead, Dissolved (mg/L)			
L-4R	11/10/07	ND(0.0069)			
MW-7	11/30/07	ND(0.0069)			
MW-23	11/09/07	ND(0.0069)			
MW-26R	11/14/07	ND(0.0069)			
MW-33	11/09/07	ND(0.0069)			
MW-35	11/20/07	ND(0.0069)			
MW-37	11/27/07	ND(0.0069)			
MW-48D	11/28/07	ND(0.0069)			
MW-48I	11/28/07	ND(0.0069)			
MW-48S	11/28/07	ND(0.0069)			
MW-65D	11/12/07	ND(0.0069)			
MW-65I	11/12/07	ND(0.0069)			
MW-65S	11/12/07	ND(0.0069)			
MW-81D	11/30/07	ND(0.0069)			
MW-81S	11/30/07	ND(0.0069)			
MW-85D	12/04/07	ND(0.0069)			
MW-85I	12/04/07	ND(0.0069)			
MW-85S	12/04/07	0.0095 J			
MW-94S	11/27/07	ND(0.0069)			
MW-95D	11/14/07	ND(0.0069)			
MW-95S	11/14/07	ND(0.0069)			
MW-100S	11/16/07	ND(0.0069)			
MW-101S	11/30/07	ND(0.0069)			
MW-104S	11/10/07	ND(0.0069)			
MW-114	11/27/07	ND(0.0069)			
MW-115D	11/29/07	ND(0.0069)			
MW-115S	11/29/07	ND(0.0069)			
MW-120	11/15/07	ND(0.0069)			
MW-128	11/29/07	ND(0.0069)			
MW-131	11/20/07	ND(0.0069)			
MW-132	11/19/07	ND(0.0069)			
MW-133	11/20/07	ND(0.0069)			
MW-134	11/19/07	ND(0.0069)			
Equipment Blank	11/29/07	ND(0.0069)			
	12/04/07	ND(0.0069)			

Notes:

ND Not detected at the indicated laboratory reporting limit

J Estimated value mg/L miligrams per liter

ProjectDirect: Table 2b PK:16 RK:126

**FIGURES** 













